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New Generation of Physical Ranges for Infantry Training: Bringing in Sensor Systems and VR Technologies

Sadagic, Amela

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New Generation of Physical Ranges for Infantry Training: Bringing in Sensor Systems and VR Technologies

Amela Sadagic, Ph.D.
MOVES Research Associate Professor

831-656-3819
asadagic@nps.edu
http://movesinstitute.org/~amela

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nps.edu
http://movesinstitute.org/~amela

M&S Solutions in Training Domain

Now/majority of solutions:

- Support Live-Virtual-Constructive sub-division
- Advocate a replacement of training on physical ranges with training using simulations

ISSUES to be considered:

- Training needs
- Is such subdivision productive?

We propose…

Go for an organic, eclectic mix of training approaches, technologies, systems and tools that support training objectives in given training environment, most effectively:

- They feed into (and off) each other
- They cover the largest portion of training cycle
- They serve majority of users (instructors & trainees)

→ Recognize & respect the input from domain / end users: they are your team members

Ranges for Urban Warfare: outdoor

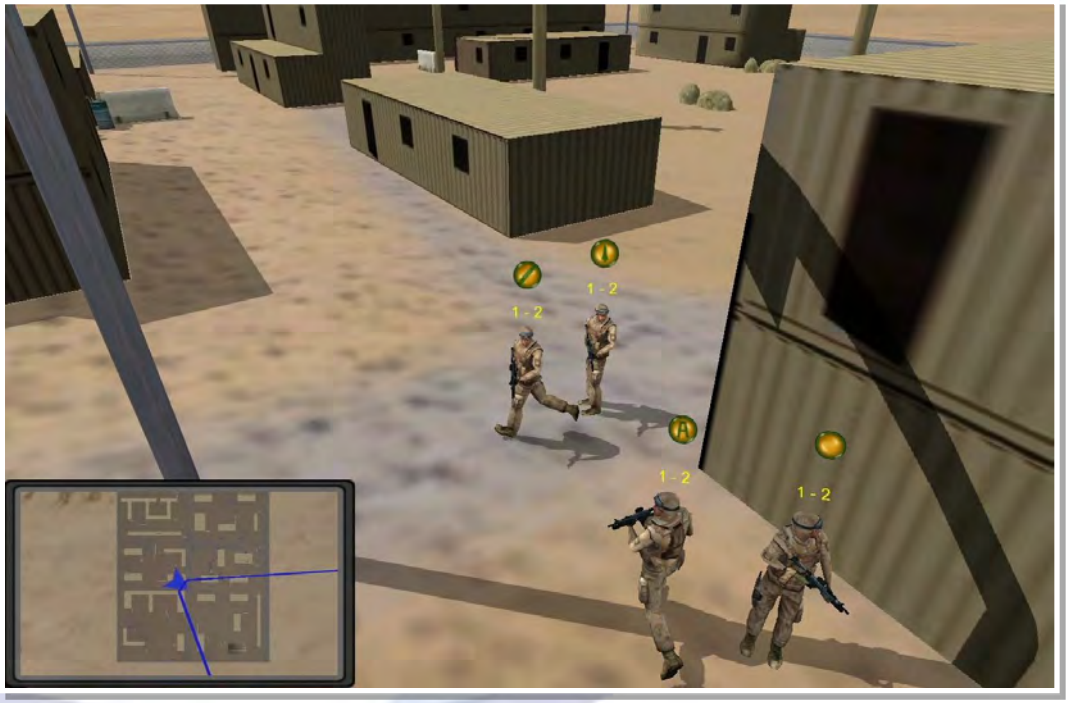
Now: a set of disjoint 2D video streams

Ranges for Urban Warfare: outdoor

Future: “BASE-IT” approach

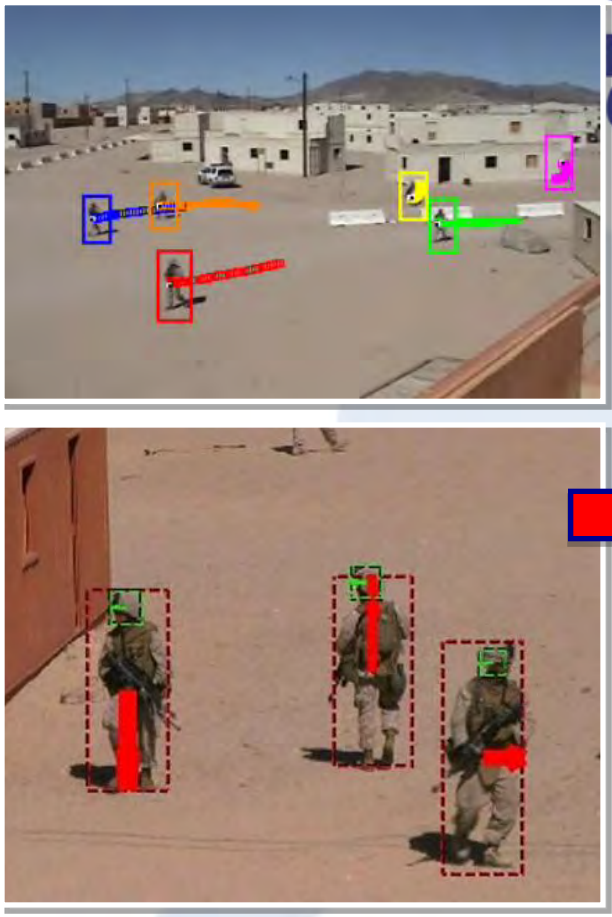
real time 2D

real time 3D



Sponsor: ONR; 4 years; $6.5 M

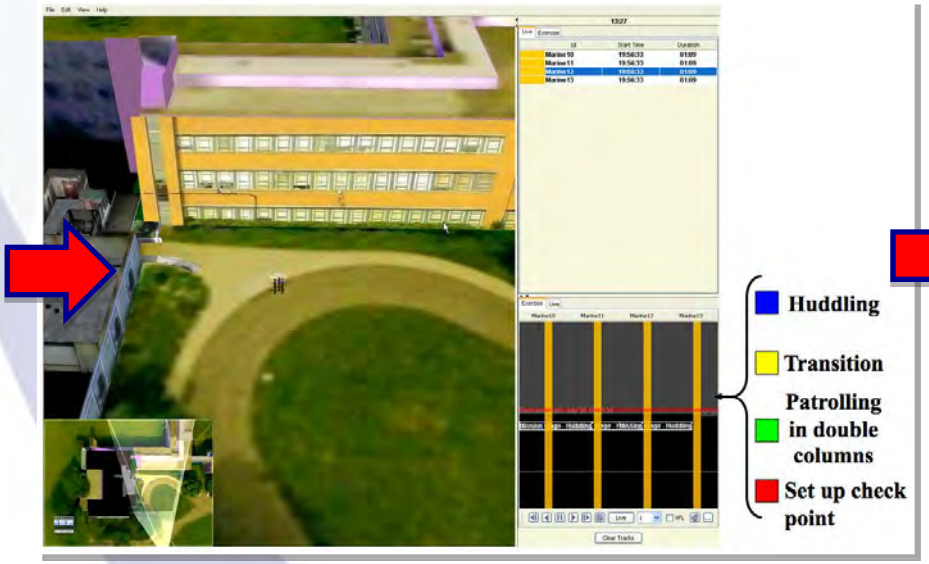
Technologies Used



Multi-sensor system (USMC cameras, GPS & IMUs) with automated calibration & camera management

Marine tracking: Derive high precision multidimensional data sets with 3D position, posture, head / torso / weapon orientation

Technologies Used



Conduct **automated behavior analysis** - recognize basic and complex behaviors, and provide **automated performance evaluation** for teams and individuals

Visualize data and results of behavior analysis on multiple platforms, and enable quick searchers and "free play" (behavior synthesis)

Military Relevance & Operational Impact

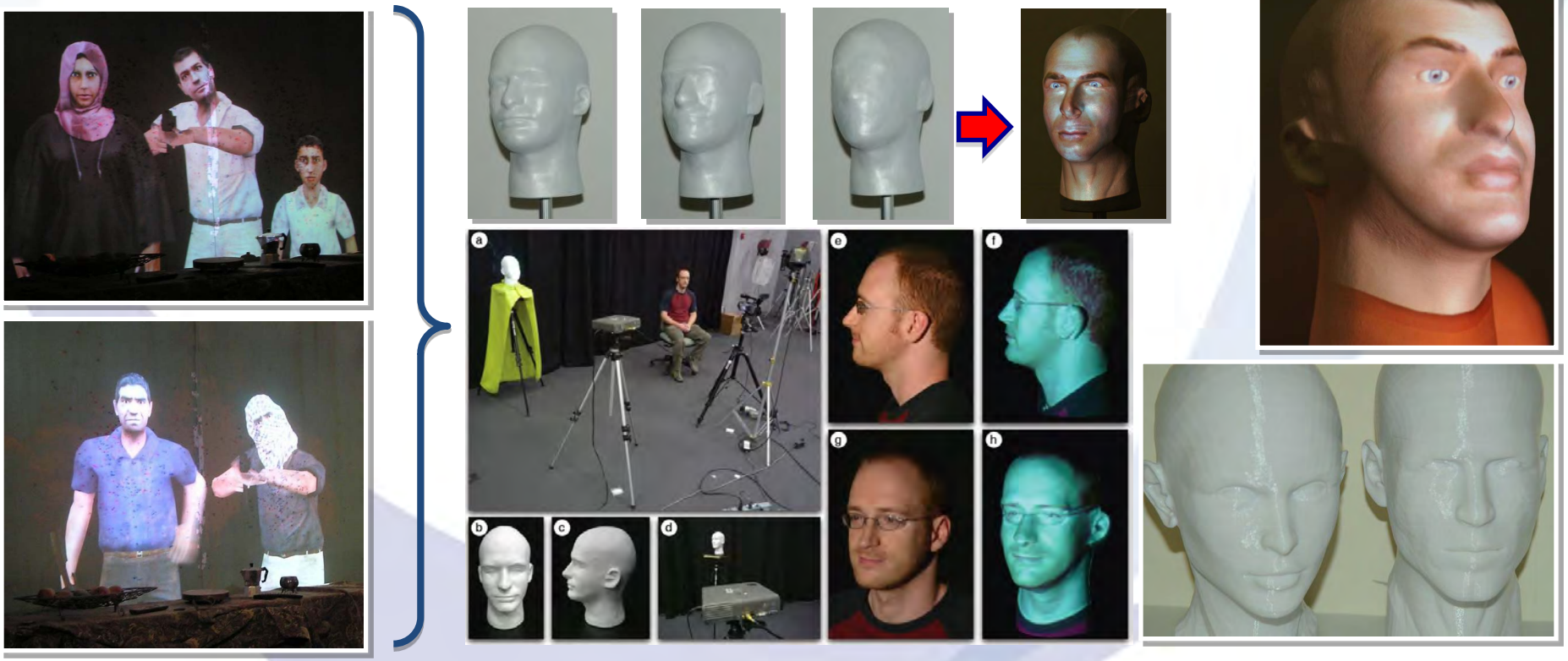
- Enhanced preparation for training in urban warfare: play-back and analysis of training runs conducted by other units, intuitive tools for mission planning.
- Improved effectiveness of After Action Review: Instructors provided with quantitative measures about unit performance,
- Smart searches & quick review of recorded unit performances (3D data) and ‘what-if’ scenarios.
- USMC-wide benefits: analysis of historical data and trends across many units.

Ranges for Urban Warfare: indoor

Now: 2D virtual humans

Ranges for Urban Warfare: indoor

- **Future**: "3D Display and Capture of Humans for Live-Virtual Training" approach



Sponsor: ONR; 3 years; $1.8 M

2 Demo Stations (Wednesday evening)

Virtual Sand-Table

WA- 212A

3D Virtual Humans

WA-212B

Shameless Plug-in…

We have 2 National Research Council (NRC) PostDoc positions open – one for each project.

Any recently graduated PhD interested?

→ contact me

Fields:

- Modeling and Simulation,
- Human Factors,
- Computer Science,
- HSI.

The Team


3D Visualization System and Planning Tool
Intelligent Training System